

WHAT IS CLAIMED IS:

1. A telecommunication equipment, comprising:

a switch receiving data from a plurality of ports and operable to insert a unique port identifier in the data from each port to identify the source port of the data; and

a multiplexer coupled to the switch and operable to multiplex the data from the plurality of ports into a single serial data stream.

2. The telecommunication equipment, as set forth in claim 1, wherein the switch receives data frames from a plurality of Ethernet ports.

3. The telecommunication equipment, as set forth in claim 1, wherein the multiplexer is operable to multiplex the data from the plurality of ports into a single SONET synchronous payload envelope.

4. The telecommunication equipment, as set forth in claim 1, wherein the multiplexer is operable to convert the single serial data stream into optical signals.

5. The telecommunication equipment, as set forth in claim 1, further comprising a subscriber access multiplexer operable to receive the single serial data stream from the multiplexer, demultiplex the serial data stream into data from each port, and route the data based on the unique port identifier.

6. The telecommunication equipment, as set forth in claim 1, wherein the switch is operable to insert the unique port identifier into a VID data field of a tagged MAC frame of the data from each port.

7. The telecommunication equipment, as set forth in claim 1, further comprising:

a subscriber access multiplexer operable to receive data from a plurality of sender nodes in a network and operable to insert the unique port identifier based on an IP address of the sender node of the data, and multiplex the data into a single serial data stream;

the multiplexer being operable to receive the single serial data stream from the subscriber access multiplexer and demultiplex the data; and

the switch being operable to switch the demultiplexed data based on the unique port identifier to the plurality of ports.

8. The telecommunication equipment, as set forth in claim 1, further comprising a subscriber access multiplexer operable to receive the single serial data stream from the multiplexer and route the data to a destination network node based on the unique port identifier, a MAC address and IP address in the data.

9. A method comprising:

receiving data from a plurality of ports;

adding a unique port identifier to the data from each port to identify the port  
from which the data came; and

5 multiplexing the data from the plurality of ports into a single data stream for  
transmission.

10. The method, as set forth in claim 9, wherein receiving data comprises  
receiving data from a plurality of Ethernet ports.

11. The method, as set forth in claim 9, wherein multiplexing the data  
comprises multiplexing the data into a single SONET synchronous payload envelope.

12. The method, as set forth in claim 9, wherein adding the unique port  
15 identifier comprises inserting the unique port identifier into a VID field of a tagged  
MAC frame of the data.

13. The method, as set forth in claim 9, further comprising converting the  
single serial data stream into SONET optical signals for transmission.

14. The method, as set forth in claim 9, further comprising:  
receiving the single serial data stream;  
demultiplexing the single serial data stream into data from each port; and  
20 routing the data from each port based on the unique port identifier.

15. The method, as set forth in claim 9, further comprising:

receiving data from a plurality of sender nodes in a network;

inserting a unique port identifier based on an IP address of the sender node of  
the data; and

5 multiplexing the data into a single serial data stream for transmission;

receiving the transmitted data and demultiplexing the data into data from each  
sender node; and

switching the demultiplexed data based on the unique port identifier to the  
plurality of ports.

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16. The method, as set forth in claim 9, further comprising receiving the  
single serial data stream and routing the data to a destination network node based on  
the unique port identifier, a MAC address and IP address in the data.

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17. A method of multiplexing data from a plurality of ports for transmission, comprising:

receiving data from the plurality of ports;

5 adding a unique port identifier to a predetermined header field of the data from each port to identify the port from which the data came;

multiplexing the data from the plurality of ports into a single SONET synchronous payload envelope; and

converting the multiplexed data into a SONET optical signal for transmission.

10 18. The method, as set forth in claim 17, wherein receiving data comprises receiving data from a plurality of Ethernet ports.

15 19. The method, as set forth in claim 17, wherein adding the unique port identifier comprises inserting the unique port identifier into a VID field of a tagged MAC frame of the data.

20. The method, as set forth in claim 17, further comprising:

receiving the SONET optical signal and converting to a single data stream;

demultiplexing the data stream from each port; and

20 routing the data from each port based on the unique port identifier.

21. The method, as set forth in claim 17, further comprising:

receiving data from a plurality of sender nodes in a network;

25 inserting a unique port identifier based on an IP address of the sender node of the data;

multiplexing the data into a single serial data stream for transmission;

receiving the transmitted data and demultiplexing the data into data from each sender node; and

30 switching the demultiplexed data based on the unique port identifier to the plurality of ports.

22. The method, as set forth in claim 17, further comprising receiving the single serial data stream and routing the data to a destination network node based on the unique port identifier, a MAC address and IP address in the data.

22. The method, as set forth in claim 17, further comprising receiving the single serial data stream and routing the data to a destination network node based on the unique port identifier, a MAC address and IP address in the data.